

Review of: “Impacts of Climate Change on the Offshore Wind Industry in Metropolitan France: Insights from the 2C NOWProject” by Youen Kervella et al. WES-2025-266

March 9, 2026

Recommendation and scope

The manuscript investigates the impact of climate change on metocean conditions along France's three maritime fronts, focusing on wind resources, significant wave height, water levels, and the occurrence of extreme conditions. The manuscript is well organised and within the scope of wind energy science, and I recommend it be accepted after major revisions, particularly to better describe the methods and discuss the consequences of their assumptions.

Originality

The manuscript is original because it considers several aspects of offshore wind development. Like wind resources, significant wave height, and perturbations to the bottom of the sea.

Scientific rigour

The scientific rigour of the manuscript is sound, but the consequences of certain assumptions warrant further discussion. For example, extrapolating 10 m winds to turbine height introduces biases, especially along the coastline. Thus, I recommend the following revisions:

Major comments

1. L72: One must be very careful with this. Are these averaged values of U and V, or the average of the wind speed? Note that these may differ substantially and can affect your conclusions. The 3-hourly instantaneous zonal and meridional components are available from the ESGF repositories.
2. The extrapolation of the winds to 150 m height is not well explained. Please elaborate.
3. I believe what you refer to as "downscaling" is merely a bias correction based on quartiles. Is that correct? The downscaling section warrants further elaboration.
4. Table 5. It would be useful to show a map of the sites. Also, are the areas homogeneous? Are you sure all these points are over water in all GCMs? If part of the GCM grip point is over land, other factors could be introduced.

5. In the Limitation section, the possible changes in shear are also not included in this study, and it should be mentioned. Other factors that can introduce uncertainty should also be considered.

Minor comments and corrections

1. L7: CMIP6 and IPCC and two terms not directly linked. Yes, CMIP6 was done to serve as a basis for the 6th report. Please rewrite.
2. L16: "Climate change is expected to profoundly reshape the environmental conditions which govern offshore wind energy production." I am not sure this sentence is true; at least it is exaggerated. Can you provide a reference?
3. L26: Again, can you provide a reference to the statement "... leading to significant losses in energy production"?
4. L28: "due to changes in atmospheric circulation and land-sea thermal contrasts — a phenomenon known as global terrestrial stilling" I thought the stilling was mostly associated with changes in surface roughness. Please check that the statement is correct.
5. Table 3. I don't think this is the actual resolution. These models have dlat x dlon grid spacing. Please check this statement.
6. Figure 1. Please label the different panels on the plot (a), (b), etc. Also, what is the y-axis on each plot? It is not clear in the top row of figures.
7. Figure 4. This is not the same period as in the previous figure. It would be good to be consistent.
8. L208–209: "Intra- and inter-farm wake effects are not considered in this study." Please explain if this could be important.
9. L225: Please use SI units. These are required by WES.
10. Table 11: The turbine capacity should be listed here, not the height.
11. Figure 6: The legend at the top is too small to understand what the different colours mean. It will be better to replace these with colour bars.
12. Larsen et al (2023) on L410 was rejected by the journal and should not be cited.

Writing

The overall quality of the paper's writing needs significant enhancement to meet the required academic standards.

Length

The manuscript length is adequate.

Figures and tables

Many figures and tables require revision as outlined above. Overall, figure captions should be revised to ensure they contain all required information.

Title

I am not sure whether non-French readers are familiar with the meaning of the term “Metropolitan” in the title. Perhaps the term “European” France is more familiar.

Abstract and Plain text summary

The abstract his basically fine, but too much text is devoted to describing the project and objectives, and very little to the method and the study’s conclusions. I suggest reorganising it when the rest of the manuscript is revised.

References

The references used are comprehensive and relevant, except for the one discussed in point 12 above.